PRINTING CONTROL DEVICE, DATA RECEIVING METHOD THEREOF AND SLEEP RELEASING METHOD THEREOF

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Abstract

PURPOSE: To continue data receiving processing without resuming the supply of power to the respective parts of a printing main body every time even if data is received from a host device when the supply of power to the respective parts of the printer main body excepting communication function is stopped.
CONSTITUTION: In such a state that a power consumption control part 11 is transited to a sleep mode stopping the supply of power to the respective parts of a printer main body excepting the communication function with a host device, a control part 10 analyzes the data stored in a receiving buffer 9 storing the data received from host computers 1-5 to discriminate whether the data having to resume the supply of power to respective parts of the printer main body is received and a communication control part 14 controls the receiving processing of data corresponding to the discrimination result so as to continuously store the data in the receiving buffer.

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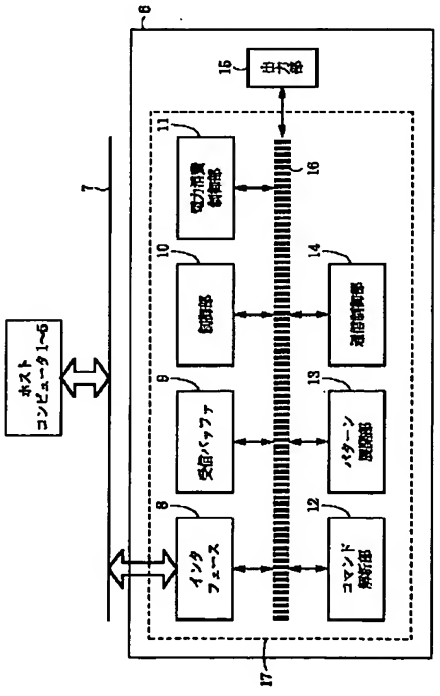
(54)【発明の名称】　印刷制御装置および印刷制御装置のデータ受信方法並びに印刷制御装置のスリープ解除方法

(57)【要約】

【目的】　通信機能を除く印刷装置本体の各部への電力供給を休止している際に、上位装置から情報を受信したとしても、毎回印刷装置本体の各部への電力供給を再開することなく、情報受信処理を継続することができる。

【構成】　電力消費制御部１１が上位装置との通信機能を除く印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、制御部１０がホストコンピュータ１～５から受信した情報を蓄える受信バッファ９に蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別し、該判別結果に応じて通信制御部１４が前記情報を前記受信バッファに継続して蓄えるように前記情報の受信処理を制御する構成を特徴とする。



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【特許請求の範囲】

【請求項１】　電源から供給される印刷装置本体への電力消費を制御する電力消費制御手段と、前記電力消費制御手段が上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、上位装置から受信した情報を蓄える受信バッファと、前記受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別手段と、前記判別手段の判別結果に応じて前記情報を前記受信バッファに継続して蓄えるように前記情報の受信処理を制御する制御手段とを有する印刷制御装置。

【請求項２】　電源から供給される印刷装置本体への電力消費を制御する電力消費制御手段と、前記電力消費制御手段が上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、上位装置から受信した情報を蓄える受信バッファと、前記受信バッファに蓄えられた前記情報の蓄積量が一定量を越えたかどうかを判断する受信量判断手段と、前記受信量判断手段が前記情報の蓄積量が一定量を越えたと判断した場合に、前記受信バッファに蓄えられた一定量中の情報を検索して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別手段と、前記判別手段の判別結果に応じて前記情報を前記受信バッファに継続して蓄えるように前記情報の受信処理を制御する制御手段とを有する印刷制御装置。

【請求項３】　前記判別手段が前記印刷装置本体各部への電源供給を再開すべき情報を受信していると判別した場合に、電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給の再開を制御することを特徴とする請求項１または２記載の印刷制御装置。

【請求項４】　情報は、印刷制御コード，印刷文字コード等を含むことを特徴とする請求項１または２記載の印刷制御装置。

【請求項５】　電源から供給される印刷装置本体への電力消費を制御する電力消費制御手段と、前記電力消費制御手段が上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、上位装置から受信した情報を蓄える受信バッファとを有する印刷制御装置のデータ受信方法において、前記受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別工程と、該判別結果に応じて前記情報を前記受信バッファに継続して蓄えるデータ蓄積工程とを有することを特徴とする印刷制御装置のデータ受信方法。

【請求項６】　上位装置から受信した情報を蓄える受信バッファを有する印刷制御装置のスリープ解除方法において、前記上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止する休止工程と、前記印刷装置本体各部への電源供給が休止している間に、前記受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別工程と、該判別結果に応じて電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給を再開する再開工程とを有することを特徴とする印刷制御装置のスリープ解除方法。

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【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、上位装置から受信した印刷情報を解析して印刷装置本体を制御する印刷制御装置および印刷制御装置のデータ受信方法並びに印刷制御装置のスリープ解除方法に関するものである。

【０００２】

【従来の技術】ネットワークコンピュータシステム（スタンドアローンシステムを含む）において、ネットワークに接続されているプリンタは、データが一定時間以上受信されない場合、省電力化のために、プリンタ全体の電力消費量を抑える状態（以降スリープモードと呼ぶ）に、プリンタの状態を移行し、データを受信すると即座に、印刷実行可能状態（以降通常状態と呼ぶ）に、プリンタの状態の移行を行なっていた。

【０００３】

【発明が解決しようとする課題】しかしながら、上記の従来技術において、送られてくるデータには、印刷データとプリンタ設定等の印刷する必要のないデータも含まれる。

【０００４】そのため、印刷データではないデータを受信した場合でも、プリンタは通常状態に復帰してしまうため、節電制御の効果が薄れてしまうという問題点があった。

【０００５】本発明は、上記の問題点を解消するためになされたもので、本発明に係る第１の発明～第６の発明の目的は、通信機能を除く印刷装置本体の各部への電力供給を休止している際に、上位装置から電力供給を再開すべき情報を受信したかどうかを判別して情報の継続的な受信または印刷装置本体各部への電力供給の再開を制御することにより、通信機能を除く印刷装置本体の各部への電力供給を休止している際に、上位装置から情報を受信したとしても、毎回印刷装置本体の各部への電力供給を再開することなく、情報受信処理を継続したり、電力供給を再開する制御を効率よく行える印刷制御装置および印刷制御装置のデータ受信方法並びに印刷制御装置のスリープ解除方法を提供することである。

【０００６】

【課題を解決するための手段】本発明に係る第１の発明は、電源から供給される印刷装置本体への電力消費を制御する電力消費制御手段と、前記電力消費制御手段が上位装置との通信機能を除く前記印刷装置本体各部への電

源供給を休止するスリープモードに遷移させた状態時に、上位装置から受信した情報を蓄える受信バッファと、前記受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別手段と、前記判別手段の判別結果に応じて前記情報を前記受信バッファに継続して蓄えるように前記情報の受信処理を制御する制御手段とを有するものである。

【０００７】本発明に係る第２の発明は、電源から供給される印刷装置本体への電力消費を制御する電力消費制御手段と、前記電力消費制御手段が上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、上位装置から受信した情報を蓄える受信バッファと、前記受信バッファに蓄えられた前記情報の蓄積量が一定量を越えたかどうかを判断する受信量判断手段と、前記受信量判断手段が前記情報の蓄積量が一定量を越えたと判断した場合に、前記受信バッファに蓄えられた一定量中の情報を検索して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別手段と、前記判別手段の判別結果に応じて前記情報を前記受信バッファに継続して蓄えるように前記情報の受信処理を制御する制御手段とを有するものである。

【０００８】本発明に係る第３の発明は、前記判別手段が前記印刷装置本体各部への電源供給を再開すべき情報を受信していると判別した場合に、電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給の再開を制御するものである。

【０００９】本発明に係る第４の発明は、情報は、印刷制御コード，印刷文字コード等を含むものである。

【００１０】本発明に係る第５の発明は、電源から供給される印刷装置本体への電力消費を制御する電力消費制御手段と、前記電力消費制御手段が上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、上位装置から受信した情報を蓄える受信バッファとを有する印刷制御装置のデータ受信方法において、前記受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別工程と、該判別結果に応じて前記情報を前記受信バッファに継続して蓄えるデータ蓄積工程とを有するものである。

【００１１】本発明に係る第６の発明は、上位装置から受信した情報を蓄える受信バッファを有する印刷制御装置のスリープ解除方法において、前記上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止する休止工程と、前記印刷装置本体各部への電源供給が休止している間に、前記受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別工程と、該判別結果に応じて電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給を再開する再開工程とを有するものである。

【００１２】

【作用】第１の発明においては、電力消費制御手段が上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、判別手段が上位装置から受信した情報を蓄える受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別し、該判別結果に応じて制御手段が前記情報を前記受信バッファに継続して蓄えるように前記情報の受信処理を制御して、スリープモードに遷移させた状態において、上位装置からの情報を継続して解析処理することを可能とする。

【００１３】第２の発明においては、電力消費制御手段が上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、受信量判断手段が上位装置から受信した情報を蓄える受信バッファに蓄えられた前記情報の蓄積量が一定量を越えたかどうかを判断し、前記情報の蓄積量が一定量を越えたと判断した場合に、判別手段が上位装置から受信した情報を蓄える受信バッファに蓄えられた一定量の前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別し、該判別結果に応じて制御手段が前記情報を前記受信バッファに継続して蓄えるように前記情報の受信処理を制御して、スリープモードに遷移させた状態において、所定のデータ量を受信する毎に、上位装置からの情報を継続して解析処理することを可能とする。

【００１４】第３の発明においては、判別手段が前記印刷装置本体各部への電源供給を再開すべき情報を受信していると判別した場合に、電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給の再開を制御して、スリープ状態を解除して、印刷可能な状態に遷移させることを可能とする。

【００１５】第４の発明においては、受信バッファには印刷制御コード，印刷文字コード等を含む情報を蓄え、判別手段が該情報が印刷させるべき印刷文字コードであると判別した場合に、電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給の再開を制御して、スリープ状態を解除して、印刷可能な状態に遷移させることを可能とする。

【００１６】第５の発明においては、前記受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別し、該判別結果に応じて前記情報を前記受信バッファに継続して蓄え、スリープモードに遷移させた状態において、上位装置からの情報を継続して解析する処理をプログラム制御することを可能とする。

【００１７】第６の発明においては、上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止している間に、前記受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別し、該判別結果に応じて電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給を再開して、スリープ状態を解除して、印刷可能な状態に遷移させる処理をプログラム制御することを可能とする。

【００１８】

【実施例】以下、本発明に係わる実施例を添付図面にしたがって説明する。

【００１９】図１は本発明を適用可能な印刷システムの概要を説明するブロック図である。

【００２０】この図に示すように、本実施例によるネットワーク上の印刷システムは、ネットワーク７を通じて、ホストコンピュータ１～５とプリンタ６が接続されている。

【００２１】図２は本発明の一実施例を示す印刷システムの構成を説明するブロック図であり、プリンタ６は印刷制御部１７と出力部１５等から構成されている。

【００２２】印刷制御部１７において、１０は制御部で、ＲＯＭやＲＡＭを含むＣＰＵを有し、装置全体をコントロールする。８はホストコンピュータ１～５とデータ受信のために利用するインタフェース、１４は通信制御部で、ネットワーク７を介しての、ホストコンピュータとの通信プロトコルに基づき、データの送受信を管理する。１２はコマンド解釈部で、ホストコンピュータから送られたデータ（印刷データおよび印刷制御コード等の）を解析する。９は受信バッファである。

【００２３】１３はパターン展開部で、文字や図形等の印刷データを展開する。１１は電力消費制御部で、プリンタ全体の電力消費を管理、制御する。１６は内部バスで、制御部１０は該内部バス１６を介して各部を制御している。なお、出力部１５は、展開した印刷データンを印刷する。

【００２４】以下、本実施例と第１，第３，第４の発明の各手段との対応及びその作用について図２を参照して説明する。

【００２５】第１の発明は、図示しない電源から供給される印刷装置本体への電力消費を制御する電力消費制御手段（電力消費制御部１１）と、前記電力消費制御手段が前記上位装置（ホストコンピュータ１～５）との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、上位装置から受信した情報を蓄える受信バッファ９と、前記受信バッファ９に蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別手段（制御部１０）と、前記判別手段の判別結果に応じて前記情報を前記受信バッファに継続して蓄えるように前記情報の受信処理を制御する制御手段（通信制御部１４）とを有し、電力消費制御部１１が前記上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、制御部１０がホストコンピュータ１～５から受信した情報を蓄える受信バッファ９に蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別し、該判別結果に応じて通信制御部１４が前記情報を前記受信バッファに継続して蓄えるように前記情報の受信処理を制御して、スリープモードに遷移させた状態において、上位装置からの情報を継続して解析処理することを可能とする。

【００２６】第３の発明は、判別手段（制御部１０）が前記印刷装置本体各部への電源供給を再開すべき情報を受信していると判別した場合に、電力消費制御部１１が前記休止中の前記印刷装置本体各部への電源供給の再開を制御して、スリープ状態を解除して、印刷可能な状態に遷移させることを可能とする。

【００２７】第４の発明は、受信バッファ９には印刷制御コード，印刷文字コード等を含む情報を蓄え、判別手段が該情報が印刷させるべき印刷文字コードであると判別した場合に、電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給の再開を制御して、スリープ状態を解除して、印刷可能な状態に遷移させることを可能とする。

【００２８】次に、図２に示した印刷制御部１７の印刷制御動作について図３に示すフローチャートを参照して説明する。

【００２９】図３は本発明の印刷システムの印刷制御方法の一実施例を示すフローチャートである。なお、（１）～（７）は各ステップを示す。また、図２に示したプリンタ６は、ホストコンピュータからデータが一定時間送られてこない場合、スリープモードに移行する機能を備えているものとする。

【００３０】スリープモード時に、ホストコンピュータからデータが送信された場合、プリンタは通信制御部１４の制御のもとにインタフェース８を用いて、上記データを受信する（１）。該受信されたデータは受信バッファ９に格納される（２）。

【００３１】次に、コマンド解析部で受信データの先頭から順に受信した制御コードを解釈し（３）、印刷可能状態にプリンタが移行する必要のある制御コードがあるかを判別する（４）。

【００３２】もし、印刷可能状態にプリンタが移行する必要のある制御コードを発見したと判別した場合、ステップ（６）に進み、電力消費制御部１１の制御に基づき、プリンタをスリープモードから印刷可能状態に復帰させる。

【００３３】そして、コマンド解析部と制御部の制御の

基にプリンタを制御する（７）。

【００３４】一方、ステップ（４）で、もし、受信データが印刷データではないと判別された場合、スリープモードの状態のままで、コマンド解析部１２と制御部１０の制御の基にプリンタを制御して（５）、ステップ（４）に戻る。なお、プリンタ６が通常状態の場合は、上記の判別を行なう制御は行なわない。

【００３５】以下、本実施例と第５，第６の発明の各工程との対応及びその作用について図２，図３を参照して説明する。

【００３６】第５の発明は、電源から供給される印刷装置本体への電力消費を制御する電力消費制御手段（電力消費制御部１１）と、前記電力消費制御手段が前記上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、上位装置（ホストコンピュータ１～５）から受信した情報を蓄える受信バッファ９とを有する印刷制御装置のデータ受信方法において、前記受信バッファ９に蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別工程（図３のステップ（３），（４））と、該判別結果に応じて前記情報を前記受信バッファに継続して蓄えるデータ蓄積工程（図３のステップ（２））とを実行して、上位装置からの情報を継続して解析する処理をプログラム制御することを可能とする。

【００３７】第６の発明は、上位装置から受信した情報を蓄える受信バッファを有する印刷制御装置のスリープ解除方法において、前記上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止する休止工程（図３のステップ（１）の前工程）と、前記印刷装置本体各部への電源供給が休止している間に、前記受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別工程（図３のステップ（３），（４））と、該判別結果に応じて電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給を再開する再開工程（図３のステップ（６））とを実行して、スリープ状態を解除して、印刷可能な状態に遷移させる処理をプログラム制御することを可能とする。

【００３８】〔他の実施例〕なお、上記実施例では、スリープモード時に、印刷可能状態にプリンタが移行する必要のある制御コードを発見するまで、無制限に受信データを判別しているが、受信データ数を状態移行の判定基準に加えることにより、一定量の受信データに印刷可能状態にプリンタが移行する必要のある制御コードを発見できない場合には、受信した一連の受信データは、プリンタがスリープモードのままで対応できるものと判断し、次の受信データから再び、判別を始めるという方法もある。

【００３９】以下、本実施例と第２の発明の各手段との対応及びその作用について図２を参照して説明する。

【００４０】第２の発明は、電源から供給される印刷装置本体への電力消費を制御する電力消費制御手段（電力消費制御部１１）と、前記電力消費制御手段が前記上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、上位装置（ホストコンピュータ１～５）から受信した情報を蓄える受信バッファ９と、前記受信バッファ９に蓄えられた前記情報の蓄積量が一定量を越えたかどうかを判断する受信量判断手段（制御部１０による）と、前記受信量判断手段が前記情報の蓄積量が一定量を越えたと判断した場合に、前記受信バッファに蓄えられた一定量中の情報を検索して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別する判別手段（制御部１０による）と、前記判別手段の判別結果に応じて前記情報を前記受信バッファ９に継続して蓄えるように前記情報の受信処理を制御する制御手段（通信制御部１４）とを有し、電力消費制御部１１がホストコンピュータ１～５との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、制御部１０がホストコンピュータ１～５から受信した情報を蓄える受信バッファ９に蓄えられた前記情報の蓄積量が一定量を越えたかどうかを判断し、前記情報の蓄積量が一定量を越えたと判断した場合に、さらに、制御部１０がホストコンピュータ１～５から受信した情報を蓄える受信バッファ９に蓄えられた一定量の前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別し、該判別結果に応じて通信制御部１４が前記情報を前記受信バッファ９に継続して蓄えるように前記情報の受信処理を制御して、スリープモードに遷移させた状態において、所定のデータ量を受信する毎に、上位装置からの情報を継続して解析処理することを可能とする。

【００４１】なお、本発明は、複数の機器から構成されるシステムに適用しても、１つの機器から成る装置に適用しても良い。また、本発明はシステムあるいは装置にプログラムを供給することによって達成させる場合にも適用できることは言うまでもない。

【００４２】

【発明の効果】以上説明したように、本発明に係る第１の発明によれば、電力消費制御手段が上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、判別手段が上位装置から受信した情報を蓄える受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別し、該判別結果に応じて制御手段が前記情報を前記受信バッファに継続して蓄えるように前記情報の受信処理を制御するので、スリープモードに遷移させた状態において、上位装置からの情報を継続して解析処理することが

できる。

【００４３】第２の発明によれば、電力消費制御手段が上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止するスリープモードに遷移させた状態時に、受信量判断手段が上位装置から受信した情報を蓄える受信バッファに蓄えられた前記情報の蓄積量が一定量を越えたかどうかを判断し、前記情報の蓄積量が一定量を越えたと判断した場合に、判別手段が上位装置から受信した情報を蓄える受信バッファに蓄えられた一定量の前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別し、該判別結果に応じて制御手段が前記情報を前記受信バッファに継続して蓄えるように前記情報の受信処理を制御するので、スリープモードに遷移させた状態において、所定のデータ量を受信する毎に、上位装置からの情報を継続して解析処理することができる。

【００４４】第３の発明によれば、判別手段が前記印刷装置本体各部への電源供給を再開すべき情報を受信していると判別した場合に、電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給の再開を制御するので、スリープ状態を解除して、印刷可能な状態に遷移させることができる。

【００４５】第４の発明によれば、受信バッファには印刷制御コード，印刷文字コード等を含む情報を蓄え、判別手段が該情報が印刷させるべき印刷文字コードであると判別した場合に、電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給の再開を制御するので、スリープ状態を解除して、印刷可能な状態に遷移させることができる。

【００４６】第５の発明によれば、前記受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別し、該判別結果に応じて前記情報を前記受信バッファに継続して蓄えるので、スリープモードに遷移させた状態において、上位装置からの情報を継続して解析する処理をプログラム制御することができる。

【００４７】第６の発明によれば、上位装置との通信機能を除く前記印刷装置本体各部への電源供給を休止している間に、前記受信バッファに蓄えられた前記情報を解析して前記印刷装置本体各部への電源供給を再開すべき情報を受信しているかどうかを判別し、該判別結果に応じて電力消費制御手段が前記休止中の前記印刷装置本体各部への電源供給を再開するので、スリープ状態を解除して、印刷可能な状態に遷移させる処理をプログラム制御することができる。

【００４８】従って、通信機能を除く印刷装置本体の各部への電力供給を休止している際に、上位装置から情報を受信したとしても、毎回印刷装置本体の各部への電力供給を再開することなく、情報受信処理を継続したり、電力供給を再開する制御を効率よく行える等の効果を奏する。

【図面の簡単な説明】

【図１】本発明を適用可能な印刷システムの概要を説明するブロック図である。

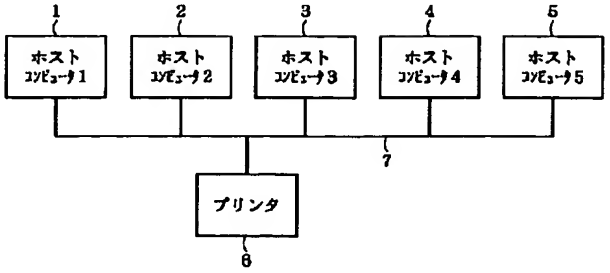
【図２】本発明の一実施例を示す印刷システムの構成を説明するブロック図である。

【図３】本発明の印刷システムの印刷制御方法の一実施例を示すフローチャートである。

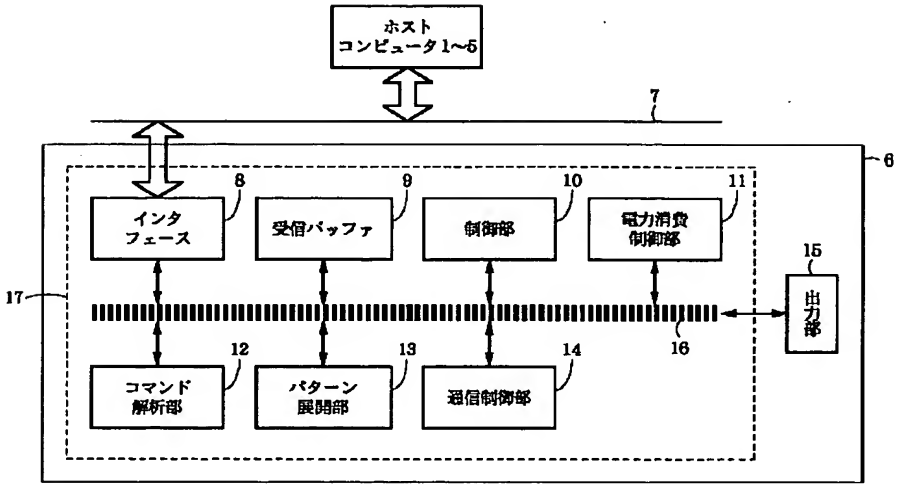
【符号の説明】

１　ホストコンピュータ
２　ホストコンピュータ
３　ホストコンピュータ
４　ホストコンピュータ
５　ホストコンピュータ
６　プリンタ
７　ネットワーク
８　インタフェース
９　受信バッファ
１０　制御部
１１　電力消費制御部
１２　コマンド解析部
１３　パターン展開部
１４　通信制御部

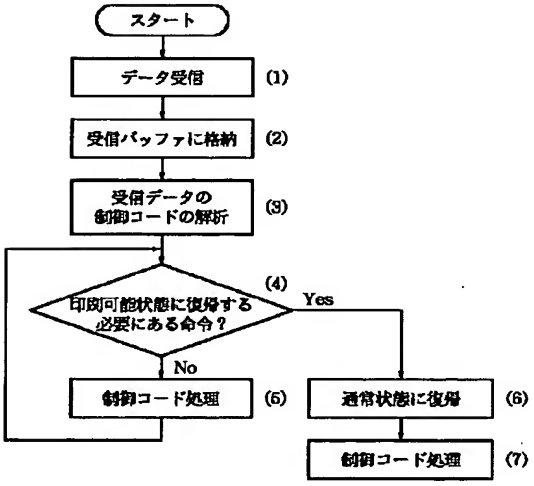
【図１】



【図２】


ホスト
コンピュータ1～5
7
6
8
インタフェース
9
受信バッファ
10
制御部
11
電力消費制御部
15
出力部
17
16
12
コマンド解析部
13
パターン展開部
14
通信制御部

【図３】


スタート
データ受信
(1)
受信バッファに格納
(2)
受信データの制御コードの解析
(3)
(4)
印刷可能状態に復帰する必要にある命令？
Yes
No
制御コード処理
(5)
通常状態に復帰
(6)
制御コード処理
(7)

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] The power consumption control means which controls the power consumption to the airline printer body supplied from a power source, The receive buffer which stores the information received from high order equipment in the condition of having made the sleep mode to which said power consumption control means stops the current supply to said each part of an airline printer body except communication facility with high order equipment changing, A distinction means to distinguish whether the information which should analyze said information stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received, The print control unit which has the control means which controls the reception of said information to continue and store said information in said receive buffer according to the distinction result of said distinction means.
[Claim 2] The power consumption control means which controls the power consumption to the airline printer body supplied from a power source, The receive buffer which stores the information received from high order equipment in the condition of having made the sleep mode to which said power consumption control means stops the current supply to said each part of an airline printer body except communication facility with high order equipment changing, An amount decision means of reception to judge whether the accumulated dose of said information stored in said receive buffer exceeded the constant rate, When said amount decision means of reception judges that the accumulated dose of said information exceeded the constant rate A distinction means to distinguish whether the information which should retrieve the information in the constant rate stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received, The print control unit which has the control means which controls the reception of said information to continue and store said information in said receive buffer according to the distinction result of said distinction means.
[Claim 3] The print control unit according to claim 1 or 2 characterized by a power consumption control means controlling the restart of the current supply to said each part of an airline printer body under said pause when the information to which said distinction means should resume the current supply to said each part of an airline printer body was received and it distinguishes.
[Claim 4] Information is a print control unit according to claim 1 or 2 characterized by including a printing control code, a printer graphic code, etc.
[Claim 5] The power consumption control means which controls the power consumption to the airline printer body supplied from a power source, In the condition of having made the sleep mode to which said power consumption control means stops the current supply to said each part of an airline printer body except communication facility with high order equipment changing In the data receiving approach of a print control unit of having the receive buffer which stores the information received from high order equipment The distinction process which distinguishes whether the information which should analyze said information stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received, The data receiving approach of the print control unit characterized by having the data accumulation process which continues and stores said information in said receive buffer according to this distinction result.
[Claim 6] In the sleep discharge approach of a print control unit of having the receive buffer which stores the information received from high order equipment The pause process which stops the

current supply to said each part of an airline printer body except communication facility with said high order equipment, The distinction process which distinguishes whether the information which should analyze said information stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received while the current supply to said each part of an airline printer body has stopped, The sleep discharge approach of the print control unit characterized by having the restart process at which a power consumption control means resumes the current supply to said each part of an airline printer body under said pause according to this distinction result.

[Translation done.]

* NOTICES *

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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the sleep discharge approach of a print control unit at the data receiving approach list of the print control unit which analyzes the printed information which received from high order equipment, and controls an airline printer body, and a print control unit.
[0002]
[Description of the Prior Art] In the network computer system (a stand-alone system is included), when data were not received beyond fixed time amount, the printer connected to the network shifted the condition of a printer to the condition (it is henceforth called a sleep mode) of stopping the power consumption of the whole printer and data were received for power-saving, it was shifting the condition of a printer to printing ready condition (it is henceforth called a normal state) immediately.

[0003]
[Problem(s) to be Solved by the Invention] However, in the above-mentioned conventional technique, data without the need of printing [setup / print data, / printer] are also contained in the data sent.
[0004] Therefore, even when the data which are not print data were received, since a printer returned to a normal state, it had the trouble that the effectiveness of power-saving control will fade.
[0005] The purpose of the 1st invention which was made in order that this invention might cancel the above-mentioned trouble, and relates to this invention - the 6th invention When having stopped the electric power supply to each part of the airline printer body except communication facility By distinguishing whether the information which should resume an electric power supply was received from high order equipment, and controlling the restart of the electric power supply to informational continuous reception or each part of an airline printer body When having stopped the electric power supply to each part of the airline printer body except communication facility, even if it receives information from high order equipment It is providing with the sleep discharge approach of a print control unit the data receiving approach list of the print control unit which can perform efficiently control which continues information reception or resumes an electric power supply, and a print control unit, without resuming the electric power supply to each part of an airline printer body each time.
[0006]
[Means for Solving the Problem] The power consumption control means which controls the power consumption to the airline printer body with which the 1st invention concerning this invention is supplied from a power source, The receive buffer which stores the information received from high order equipment in the condition of having made the sleep mode to which said power consumption control means stops the current supply to said each part of an airline printer body except communication facility with high order equipment changing, A distinction means to distinguish whether the information which should analyze said information stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received, It has the control means which controls the reception of said information to continue and store said information in said receive buffer according to the distinction result of said distinction means.

[0007] The power consumption control means which controls the power consumption to the airline printer body with which the 2nd invention concerning this invention is supplied from a power source, The receive buffer which stores the information received from high order equipment in the condition of having made the sleep mode to which said power consumption control means stops the current supply to said each part of an airline printer body except communication facility with high order equipment changing, An amount decision means of reception to judge whether the accumulated dose of said information stored in said receive buffer exceeded the constant rate, When said amount decision means of reception judges that the accumulated dose of said information exceeded the constant rate A distinction means to distinguish whether the information which should retrieve the information in the constant rate stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received, It has the control means which controls the reception of said information to continue and store said information in said receive buffer according to the distinction result of said distinction means.
[0008] When the 3rd invention concerning this invention had received the information to which said distinction means should resume the current supply to said each part of an airline printer body and it distinguishes, a power consumption control means controls the restart of the current supply to said each part of an airline printer body under said pause.
[0009] In the 4th invention concerning this invention, information contains a printing control code, a printer graphic code, etc.
[0010] The power consumption control means which controls the power consumption to the airline printer body with which the 5th invention concerning this invention is supplied from a power source, In the condition of having made the sleep mode to which said power consumption control means stops the current supply to said each part of an airline printer body except communication facility with high order equipment changing In the data receiving approach of a print control unit of having the receive buffer which stores the information received from high order equipment It has the distinction process which distinguishes whether the information which should analyze said information stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received, and the data accumulation process which continues and stores said information in said receive buffer according to this distinction result.
[0011] In the sleep discharge approach of a print control unit of having the receive buffer which stores the information which the 6th invention concerning this invention received from high order equipment The pause process which stops the current supply to said each part of an airline printer body except communication facility with said high order equipment, The distinction process which distinguishes whether the information which should analyze said information stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received while the current supply to said each part of an airline printer body has stopped, It has the restart process at which a power consumption control means resumes the current supply to said each part of an airline printer body under said pause according to this distinction result.
[0012]
[Function] In the condition of having made the sleep mode to which a power consumption control means stops the current supply to said each part of an airline printer body except communication facility with high order equipment changing in the 1st invention It distinguishes whether the information to which a distinction means should analyze said information stored in the receive buffer which stores the information received from high order equipment, and should resume the current supply to said each part of an airline printer body is received. It makes it possible to control the reception of said information so that a control means continues and stores said information in said receive buffer according to this distinction result, to continue the information from high order equipment and to carry out analysis processing in the condition of having made the sleep mode changing.
[0013] In the condition of having made the sleep mode to which a power consumption control means stops the current supply to said each part of an airline printer body except communication facility with high order equipment changing in the 2nd invention It judges whether the accumulated dose of said information for which the amount decision means of reception was stored in the receive buffer which stores the information received from high order equipment exceeded the constant rate. It

distinguishes whether when it is judged that the accumulated dose of said information exceeded the constant rate, the information to which a distinction means should analyze said information on the constant rate stored in the receive buffer which stores the information received from high order equipment, and should resume the current supply to said each part of an airline printer body is received. The reception of said information is controlled so that a control means continues and stores said information in said receive buffer according to this distinction result, and whenever it receives the predetermined amount of data in the condition of having made the sleep mode changing, it makes it possible to continue the information from high order equipment and to carry out analysis processing.

[0014] In the 3rd invention, when the information to which a distinction means should resume the current supply to said each part of an airline printer body was received and it distinguishes, a power consumption control means makes it possible to control the restart of the current supply to said each part of an airline printer body under said pause, to cancel sleeping, and to make the condition which can be printed change.

[0015] It makes it possible to store the information containing a printing control code, a printer graphic code, etc. in a receive buffer in the 4th invention, for a power consumption control means to control the restart of the current supply to said each part of an airline printer body under said pause, and to cancel sleeping, when a distinction means distinguishes that it is the printer graphic code which this information should make print, and to make the condition which can be printed change.

[0016] It distinguishes whether the information which should analyze said information stored in said receive buffer in the 5th invention, and should resume the current supply to said each part of an airline printer body has been received, said information continues and stores in said receive buffer according to this distinction result, and it makes it possible to carry out program control of the processing which continues and analyzes the information from high order equipment in the condition made the sleep mode change.

[0017] In the 6th invention, while having stopped the current supply to said each part of an airline printer body except communication facility with high order equipment It distinguishes whether the information which should analyze said information stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received. It makes it possible for a power consumption control means to resume the current supply to said each part of an airline printer body under said pause according to this distinction result, to cancel sleeping, and to carry out program control of the processing which makes the condition which can be printed change.

[0018]

[Example] Hereafter, the example concerning this invention is explained according to an accompanying drawing.

[0019] Drawing 1 is a block diagram explaining the outline of the printing system which can apply this invention.

[0020] As shown in this drawing, as for the printing system on the network by this example, the printer 6 is connected with host computers 1-5 through the network 7.

[0021] Drawing 2 is a block diagram explaining the printing structure of a system which shows one example of this invention, and the printer 6 consists of a printing control section 17 and output section 15 grade.

[0022] In the printing control section 17, 10 is a control section, has CPU containing ROM or RAM and controls the whole equipment. The interface which uses 8 for host computers 1-5 and data reception, and 14 are the communications control sections, and manage transmission and reception of data based on a communications protocol with the host computer through a network 7. 12 is the command interpretation section and analyzes the data (print data, printing control code, etc.) sent from the host computer. 9 is a receive buffer.

[0023] 13 is the pattern expansion section and develops print data, such as an alphabetic character and a graphic form. 11 is a power consumption control section, and manages and controls the power consumption of the whole printer. 16 is an internal bus and the control section 10 is controlling each part through this internal bus 16. In addition, the output section 15 prints the developed printing day tongue.

[0024] Hereafter, correspondence and its operation with this example and each means of the 1st, the

3rd, and the 4th invention are explained with reference to drawing 2 .
[0025] The power consumption control means which controls the power consumption to the airline printer body supplied from the power source which does not illustrate the 1st invention (power consumption control section 11), In the condition of having made the sleep mode to which said power consumption control means stops the current supply to said each part of an airline printer body except communication facility with said high order equipment (host computers 1-5) changing A distinction means to distinguish whether the information which should analyze the receive buffer 9 which stores the information received from high order equipment, and said information stored in said receive buffer 9, and should resume the current supply to said each part of an airline printer body is received (control section 10), It has the control means (communications control section 14) which controls the reception of said information to continue and store said information in said receive buffer according to the distinction result of said distinction means. In the condition of having made the sleep mode to which the power consumption control section 11 stops the current supply to said each part of an airline printer body except communication facility with said high order equipment changing It distinguishes whether the information to which a control section 10 should analyze said information stored in the receive buffer 9 which stores the information received from host computers 1-5, and should resume the current supply to said each part of an airline printer body is received. It makes it possible to control the reception of said information so that the communications control section 14 continues and stores said information in said receive buffer according to this distinction result, to continue the information from high order equipment and to carry out analysis processing in the condition of having made the sleep mode changing.
[0026] The 3rd invention makes it possible for the power consumption control section 11 to control the restart of the current supply to said each part of an airline printer body under said pause, to cancel sleeping, and to make the condition which can be printed change, when the information to which a distinction means (control section 10) should resume the current supply to said each part of an airline printer body was received and it distinguishes.
[0027] The 4th invention makes it possible to store the information containing a printing control code, a printer graphic code, etc. in a receive buffer 9, for a power consumption control means to control the restart of the current supply to said each part of an airline printer body under said pause, and to cancel sleeping, when a distinction means distinguishes that it is the printer graphic code which this information should make print, and to make the condition which can be printed change.
[0028] Next, the printing control action of the printing control section 17 shown in drawing 2 is explained with reference to the flow chart shown in drawing 3 .
[0029] Drawing 3 is a flow chart which shows one example of the printing control approach of the printing system of this invention. In addition, (1) - (7) shows each step. Moreover, the printer 6 shown in drawing 2 shall be equipped with the function which shifts to a sleep mode when data are not sent fixed time from a host computer.
[0030] When data are transmitted from a host computer at the time of a sleep mode, a printer uses an interface 8 for the basis of control of the communications control section 14, and receives the above-mentioned data (1). The received this data are stored in a receive buffer 9 (2).
[0031] Next, it distinguishes whether there is any control code with the need that interpret the control code which received sequentially from the head of received data in the command analysis section, and a printer shifts to (3) and the condition which can be printed (4).
[0032] When it distinguishes having discovered the control code with the need that a printer shifts to the condition which can be printed, it progresses to a step (6) and a printer is returned to the condition which can be printed from a sleep mode based on control of the power consumption control section 11.
[0033] And a printer is controlled on the radical of control of the command analysis section and a control section (7).
[0034] On the other hand, when received data were not print data and it is distinguished, while it has been in the condition of a sleep mode, a printer is controlled by the step (4) on the radical of control of the command analysis section 12 and a control section 10, and it returns to (5) and a step (4) at it. In addition, when a printer 6 is a normal state, control which performs the above-mentioned distinction is not performed.

[0035] Hereafter, correspondence and its operation with this example and each process of the 5th and the 6th invention are explained with reference to drawing 2 and drawing 3 .
[0036] The power consumption control means which controls the power consumption to the airline printer body with which the 5th invention is supplied from a power source (power consumption control section 11), In the condition of having made the sleep mode to which said power consumption control means stops the current supply to said each part of an airline printer body except communication facility with said high order equipment changing In the data receiving approach of a print control unit of having the receive buffer 9 which stores the information received from high order equipment (host computers 1-5) The distinction process which distinguishes whether the information which should analyze said information stored in said receive buffer 9, and should resume the current supply to said each part of an airline printer body is received (the step (3) of drawing 3 , (4)), It makes it possible to perform the data accumulation process (step of drawing 3 (2)) which continues and stores said information in said receive buffer according to this distinction result, and to carry out program control of the processing which continues and analyzes the information from high order equipment.
[0037] In the sleep discharge approach of a print control unit of having the receive buffer which stores the information which the 6th invention received from high order equipment The pause process which stops the current supply to said each part of an airline printer body except communication facility with said high order equipment (last process of the step (1) of drawing 3), The distinction process which distinguishes whether the information which should analyze said information stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received while the current supply to said each part of an airline printer body has stopped (the step (3) of drawing 3 , (4)), It makes it possible to perform the restart process (step of drawing 3 (6)) at which a power consumption control means resumes the current supply to said each part of an airline printer body under said pause according to this distinction result, to cancel sleeping, and to carry out program control of the processing which makes the condition which can be printed change.
[0038] Although received data are distinguished without any restriction in the above-mentioned example until it discovers the control code which has the need which is [Other Example(s)] that a printer shifts in the condition which can be printed at the time of a sleep mode When the control code which has the need that a printer shifts at the condition which can be printed in the received data of a constant rate by applying the number of received data to the criterion of condition shift cannot be discovered A series of received received data are judged to be what can respond while the printer has been a sleep mode, and also have a method of beginning distinction again from the following received data.
[0039] Hereafter, correspondence and its operation with this example and each means of the 2nd invention are explained with reference to drawing 2 .
[0040] The power consumption control means which controls the power consumption to the airline printer body with which the 2nd invention is supplied from a power source (power consumption control section 11), In the condition of having made the sleep mode to which said power consumption control means stops the current supply to said each part of an airline printer body except communication facility with said high order equipment changing The receive buffer 9 which stores the information received from high order equipment (host computers 1-5), An amount decision means of reception to judge whether the accumulated dose of said information stored in said receive buffer 9 exceeded the constant rate (based on a control section 10), When said amount decision means of reception judges that the accumulated dose of said information exceeded the constant rate A distinction means to distinguish whether the information which should retrieve the information in the constant rate stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received (based on a control section 10), It has the control means (communications control section 14) which controls the reception of said information to continue and store said information in said receive buffer 9 according to the distinction result of said distinction means. In the condition of having made the sleep mode to which the power consumption control section 11 stops the current supply to said each part of an airline printer body except communication facility with host computers 1-5 changing It judges whether the accumulated dose of

said information stored in the receive buffer 9 which stores the information which the control section 10 received from host computers 1-5 exceeded the constant rate. When it is judged that the accumulated dose of said information exceeded the constant rate, further It distinguishes whether the information to which a control section 10 should analyze said information on the constant rate stored in the receive buffer 9 which stores the information received from host computers 1-5, and should resume the current supply to said each part of an airline printer body is received. In the condition of having controlled the reception of said information so that the communications control section 14 continues and stored said information in said receive buffer 9 according to this distinction result, and having made the sleep mode changing Whenever it receives the predetermined amount of data, it makes it possible to continue the information from high order equipment and to carry out analysis processing.

[0041] In addition, even if it applies this invention to the system which consists of two or more devices, it may be applied to the equipment which consists of one device. Moreover, it cannot be overemphasized that it can apply also when making this invention attain by supplying a program to a system or equipment.

[0042]

[Effect of the Invention] As explained above, according to the 1st invention concerning this invention, in the condition of having made the sleep mode to which a power consumption control means stops the current supply to said each part of an airline printer body except communication facility with high order equipment changing It distinguishes whether the information to which a distinction means should analyze said information stored in the receive buffer which stores the information received from high order equipment, and should resume the current supply to said each part of an airline printer body is received. Since the reception of said information is controlled so that a control means continues and stores said information in said receive buffer according to this distinction result, in the condition of having made the sleep mode changing, the information from high order equipment can be continued and analysis processing can be carried out.

[0043] According to the 2nd invention, in the condition of having made the sleep mode to which a power consumption control means stops the current supply to said each part of an airline printer body except communication facility with high order equipment changing It judges whether the accumulated dose of said information for which the amount decision means of reception was stored in the receive buffer which stores the information received from high order equipment exceeded the constant rate. It distinguishes whether when it is judged that the accumulated dose of said information exceeded the constant rate, the information to which a distinction means should analyze said information on the constant rate stored in the receive buffer which stores the information received from high order equipment, and should resume the current supply to said each part of an airline printer body is received. Since the reception of said information is controlled so that a control means continues and stores said information in said receive buffer according to this distinction result, whenever it receives the predetermined amount of data in the condition of having made the sleep mode changing, the information from high order equipment can be continued and analysis processing can be carried out.

[0044] Since a power consumption control means controls the restart of the current supply to said each part of an airline printer body under said pause when according to the 3rd invention the information to which a distinction means should resume the current supply to said each part of an airline printer body was received and it distinguishes, sleeping can be canceled and the condition which can be printed can be made to change.

[0045] Since a power consumption control means controls the restart of the current supply to said each part of an airline printer body under said pause when according to the 4th invention the information containing a printing control code, a printer graphic code, etc. is stored in a receive buffer and a distinction means distinguishes that it is the printer graphic code which this information should make print, sleeping can be canceled and the condition which can be printed can be made to change.

[0046] Since according to the 5th invention it distinguishes whether the information which should analyze said information stored in said receive buffer, and should resume the current supply to said each part of an airline printer body has been received and said information is continued and stored in

said receive buffer according to this distinction result, in the condition made the sleep mode change, program control of the processing which continues and analyzes the information from high order equipment can carry out.
[0047] While having stopped the current supply to said each part of an airline printer body except communication facility with high order equipment according to the 6th invention It distinguishes whether the information which should analyze said information stored in said receive buffer, and should resume the current supply to said each part of an airline printer body is received. Since a power consumption control means resumes the current supply to said each part of an airline printer body under said pause according to this distinction result, sleeping can be canceled and program control of the processing which makes the condition which can be printed change can be carried out.
[0048] Therefore, without resuming the electric power supply to each part of an airline printer body each time, even if it receives information from high order equipment when having stopped the electric power supply to each part of the airline printer body except communication facility, information reception is continued or effectiveness, like control which resumes an electric power supply can be performed efficiently is done so.

[Translation done.]

* NOTICES *

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is a block diagram explaining the outline of the printing system which can apply this invention.
[Drawing 2] It is a block diagram explaining the printing structure of a system which shows one example of this invention.
[Drawing 3] It is the flow chart which shows one example of the printing control approach of the printing system of this invention.
[Description of Notations]
1 Host Computer
2 Host Computer
3 Host Computer
4 Host Computer
5 Host Computer
6 Printer
7 Network
8 Interface
9 Receive Buffer
10 Control Section
11 Power Consumption Control Section
12 Command Analysis Section
13 Pattern Expansion Section
14 Communications Control Section

[Translation done.]

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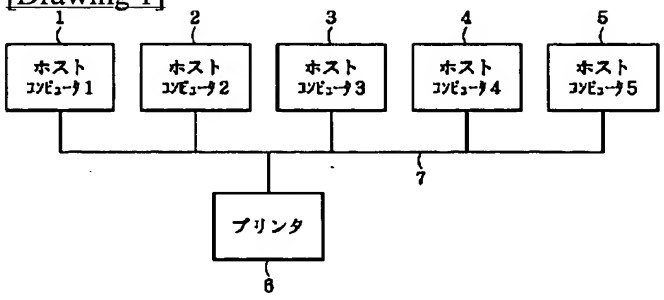
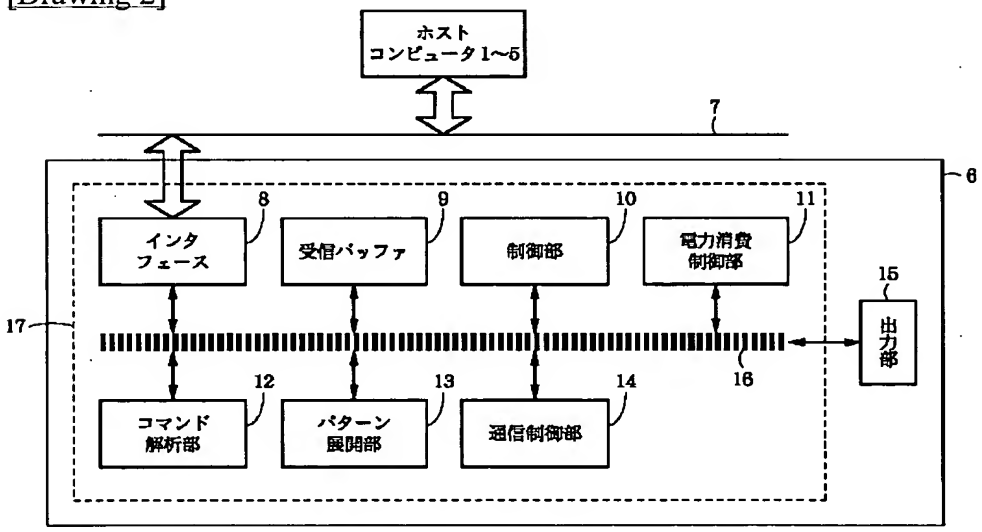
DRAWINGS

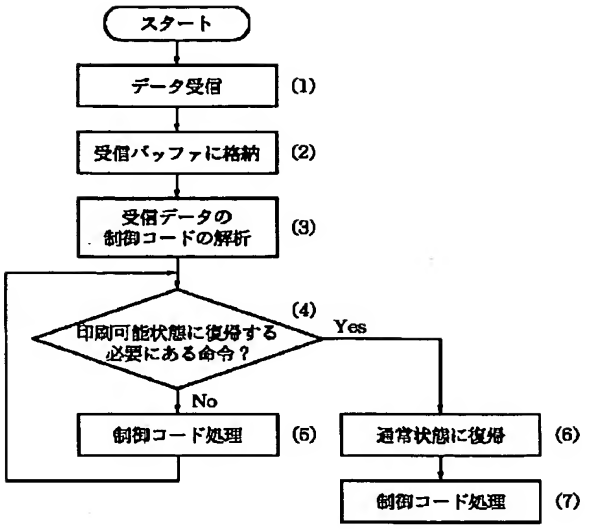
[Drawing 1]



[Drawing 2]



[Drawing 3]



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